

CLAIMS

What is claimed is:

1. A fuel cell comprising:
 - a hydrogen flow path adapted to pass hydrogen into communication with an anode catalyst of an MEA;
 - a coolant flow path adapted pass coolant through the fuel cell to cool the fuel cell;
 - an enclosure encompassing at least a part of the hydrogen flow path, the coolant flow path, or both; and
 - a hydrogen vent adapted to vent hydrogen from the enclosure without reliance upon any electrical device.
2. A fuel cell according to Claim 1, wherein the enclosure surrounds one of a fuel cell stack through which the hydrogen flow path and the coolant flow path pass, a coolant reservoir of the coolant flow path, and a hydrogen supply reservoir of the hydrogen flow path.
3. A fuel cell according to Claim 2, wherein the hydrogen vent comprises a porous material selected from the group consisting of cellulose, plastic and metal.

4. A fuel cell according to Claim 1, wherein the enclosure is a coolant reservoir and the hydrogen vent is located within a wall of the coolant reservoir.

5. A fuel cell according to Claim 4, wherein the hydrogen vent is further adapted to substantially prevent coolant from passing through the vent.

6. A fuel cell according to Claim 1, wherein the hydrogen vent is further adapted to maintain the hydrogen concentration within the enclosure below about 4 percent without reliance upon any electrical device.

7. A fuel cell according to Claim 6, wherein the hydrogen vent is adapted to maintain a hydrogen concentration within the enclosure below about 1 percent without reliance upon any electrical device.

8. A fuel cell according to Claim 1, further comprising:
a second enclosure encompassing at least a part of the hydrogen flow path, the coolant flow path, or both; and
a hydrogen vent adapted to vent hydrogen from the second enclosure.

9. A fuel cell according to Claim 8, wherein one of the enclosure or the second enclosure encompasses the other of the enclosure or the second enclosure.

10. A fuel cell according to Claim 1, wherein the hydrogen vent is further adapted to prevent a flame front from passing through the vent.

11. A method of manufacturing a fuel cell, comprising:
creating a hydrogen fuel flow path to conduct hydrogen through the fuel cell;
creating an enclosure which captures hydrogen that leaks, directly or indirectly, from the hydrogen fuel flow path; and
passively maintaining the level of hydrogen which leaks into the enclosure below a concentration level of about 4 percent.

12. A method of manufacturing a fuel cell according to Claim 11, wherein the enclosure is a coolant flow path adapted to conduct coolant through the fuel cell.

13. A method of manufacturing a fuel cell according to Claim 12, wherein passively maintaining the level of hydrogen further comprises selecting a porous material capable of passing hydrogen therethrough and capable of substantially preventing coolant from passing therethrough.

14. A method of manufacturing a fuel cell according to Claim 13, further comprising locating the porous material in a wall of a coolant reservoir of the coolant flow path.

15. A method of manufacturing a fuel cell according to Claim 12, wherein passively maintaining the level of hydrogen further comprises passively maintaining the level of hydrogen which leaks into the enclosure below a concentration level of about 1 percent.

16. A method of manufacturing a fuel cell according to Claim 11, further comprising creating a coolant flow path to conduct coolant through the fuel cell, and wherein the enclosure surrounds one of a fuel cell stack through which the hydrogen fuel flow path and the coolant flow path pass, a coolant reservoir of the coolant flow path, and a hydrogen supply reservoir of the hydrogen fuel flow path.

17. A method of manufacturing a fuel cell according to Claim 16, wherein passively maintaining the level of hydrogen further comprises selecting a porous material capable of passing hydrogen therethrough and capable of substantially preventing a flame front from passing therethrough.

18. A method of manufacturing a fuel cell according to Claim 17, wherein selecting a porous material further comprises selecting a porous material selected from the group consisting of cellulose, plastic and metal.

19. A method of manufacturing a fuel cell according to Claim 11, further comprising:

creating a second enclosure which captures hydrogen that leaks, directly or indirectly, from the hydrogen fuel flow path; and

maintaining the level of hydrogen which leaks into the second enclosure below a concentration level of about 4 percent.

20. A method of manufacturing a fuel cell according to Claim 19, wherein one of the enclosure or the second enclosure encompasses the other of the enclosure or the second enclosure.